

On the Proposed Change of the Astronomical Day. By Professor
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The recommendation of the recent Meridian Conference at Washington, that the astronomical and nautical days be arranged as soon as practicable to begin at mean midnight, has received so much attention at the hands of English and American astronomers, as to indicate its possible adoption in some quarters without due consideration of the radical character of the proposed change. I therefore desire to set forth my reasons for counselling caution in this proceeding.

Outside of statements of purely astronomical data the proposed universal day may well prove a great convenience. In the reckoning of physical and meteorological phenomena there has hitherto been no recognised standard of time in general use. For such purposes I see nothing better than the general adoption of the day beginning at Greenwich mean midnight as proposed by the Conference. Moreover, could the human race commence its work anew by obliterating the past, there would be a certain advantage in having the astronomical reckoning of time to correspond with the universal time in other departments of science; and this advantage would probably more than compensate for the loss of that simplicity and generality which inheres in the system of counting the hours from the moment when the hour-angle of the mean sun is zero. It is not plain, however, that the lack of accordance between the two reckonings of time will lead to any serious trouble or confusion. Astronomical ephemerides and observations form, so to speak, a department by themselves, which none have occasion to enter except those who are thoroughly conversant with the two methods of reckoning time. I can recall no instance of trouble or confusion in the past arising from the difference between the astronomical and the civil day.

So far as astronomical observations and ephemerides are concerned, the change, if made at all, must be made throughout, as it would be intolerable to have two methods of reckoning time in the same connected set of publications. It is, then, subject to the objection that it would cause great trouble and confusion, not only to ourselves, but to future astronomers, through as many generations as made use of our observations and ephemerides. A glance at the *Nautical Almanac* will, I conceive, convince us of this. If we are to have but one system, then, on page 11 of the month the data must be given for Greenwich midnight instead of noon, and the sidereal time must be that for midnight. If we do not do this there will be additions and subtractions of 12 hours to be performed by all future generations in changing sidereal to mean time. On page 4 the columns for midnight and noon must be interchanged. On pages 5 to 12 the hours must be reckoned from midnight. The consequence will be that

whenever the astronomer of 20 or 100 years hence has occasion to refer to the ephemeris, he must know and bear in mind which reckoning of time is adopted, else his place of the Moon will be taken out 12 hours in error. The same remark will apply to all data for which hours of time are given. To continually remember anything of this sort is a mental burden which no one can always be sure of carrying. If we could be sure of this, accidents and inadvertences would be almost unknown in the world. The ephemeris of the planets would, for consistency, have to be given for midnight instead of noon. Thus, there would be a break of half a day in the series which now progresses regularly at 24-hour intervals.

It might, indeed, be said that this ephemeris could just as well be continued for noon as given for midnight. But this would be simply a half-way step, and would lead to the difficulty that in interpolating to any required number of hours universal time, the 12 hours would have to be subtracted whenever a place of the planet had to be interpolated. I pass over a number of other points connected with the change; among them the fact that the instructions and precepts respecting time given in our books on practical astronomy will have to be changed. It is a general rule that the judgment of men, on the whole, errs as much on one side of any question as on the other. But my experience leads me to think that a decided exception to this rule arises when the question is that of changing a well-established and consistent set of methods and habits in organised work, and that we always under-estimate the trouble and confusion such changes will cause us. It is very clear to me that the change is one which ought not to be made at all, unless some stronger reason for it than is now presented shall be pointed out. In this case it ought to be made at some common fundamental epoch by an arrangement among the astronomers of the world. The beginning of the coming century would be a very good epoch, and would allow about the right time for consideration. If a ten years' continuance of the present system shows that it needs amendment, the change can then be made with less trouble than at any other time.